

## REMARKS

### I. Status of Claims

Claims 1-20 were pending. The Examiner withdrew claim 20 from consideration.

Claims 1-19 were rejected.

Claim 14 was rejected under 35 USC 112.

Claims 1-11 and 13-15 were rejected under 35 USC 103(a) over Eggers (US 6,437,509).

Claim 12 was rejected under 35 USC 103(a) over Eggers (US 6,437,509) in view of Neiger (US 4,937,496).

Claims 16-19 were rejected under 35 USC 103(a) over Eggers (US 6,437,509) in view of Makoto (JP 11-123577).

Claim 12 has been amended to remove a reference numeral. This amendment has not affected the substantive subject matter of claim 12. Applicants believe the amendment will require no further search and consideration.

Claim 14 has been amended to provide antecedent basis for the diameter of the hole B and the diameter D of the head part of the continuous pin. This amendment has not affected the substantive subject matter of claim 14. Applicants believe the amendment addresses the rejection under 35 USC 112 and will require no further search and consideration.

Claims 1-19 are pending.

### II. Rejections under 35 USC § 103(a)

Claims 1-11 and 13-15 were rejected under 35 USC 103(a) over Eggers (US 6,437,509).

In making the rejection against claim 1 reasoning was presented in the Office Action that Eggers teaches the pin being formed of separate head and pin parts, and that it has been held that the forming in one piece an article that has formerly been formed in two pieces and put together involves only routine skill in the art. It would therefore be a matter of choice for a person of ordinary skill in the art to have selected an electrode

having an integral head and shaft part rather than an electrode comprising separate head and shaft part connected together.

However, Applicants take the view that while it might involve only routine skill to construct out of one piece an item formerly constructed out of two pieces, there being no extraordinary problems associated with the manufacture of a single, integral item in the particular field of endeavor under consideration, it is not the case that construction of the electrode of Eggers in one piece will produce the subject matter of claim 1.

The construction of Eggers comprises a pin 13 and a cooling body 17, the cooling body manufactured separately and affixed to the pin 13 by a process of welding. Applicants believe that the holes as described in Eggers, referred to in the text as transverse bores 20, are produced specifically to enable manufacture of the integrated electrode of Eggers out of two pieces and therefore would not be reproduced in the electrode if the person of ordinary skill were to chose to make the electrode of Eggers out of a single piece.

The reasoning is as follows.

The text at col. 2, lines 8-15 describes how the initial introduction of a transverse bore in the cooling body facilitates production of the main axial bore, the bore through which the pin 13 will pass, because the transverse bore allows removal of vaporization particles which arise as the axial bore is produced.

Further, the text at col. 2, lines 15-18 describe how the transverse bore provides an additional site for welding of the cooling body 17 to the pin 13 other than the welding site at the cap. In fact the cooling body 17 may be welded to the pin 13 at only the sites of transverse bores and not welded at the cap itself. This is explained in lines 19-21.

Applicants therefore take the view that the transverse bores, or holes, are introduced into the electrode design as a step which facilitates further processing of the separate pin and head in order to manufacture a two piece electrode. Meanwhile, if the person of ordinary skill in the art were to attempt to manufacture a one piece electrode, in which the pin and head were integral, he would have no need to produce the holes because he would not need to weld the head onto the pin. In his method the head and pin would be produced in integral form and he would not need to create an axial bore through

the head to accommodate the pin shaft and he would further have no need to weld the head onto the pin shaft.

Applicants therefore take the view that starting from Eggers, if the person of ordinary skill in the art attempts to create a one piece electrode arrangement he will create an electrode that does not comprise holes.

Accordingly, Applicants believe that upon attempting to create a one piece electrode arrangement based on the disclosure of Eggers, the person of ordinary skill in the art will not produce the subject matter of claim 1.

Furthermore, Eggers suggests that the transverse bores, having been produced, may be used as the site of emission paste to facilitate electron emission of the electrode, col. 2, lines 23-31. In this arrangement the transverse bores, or holes, will be filled with emission paste and will therefore no longer remain empty, as holes. Even if the person of ordinary skill in the art wished to improve the electron emission of the electrode he might produce holes but he would, following the teaching of Eggers, fill them with emission paste so that the electrode no longer comprised holes.

For both these reasons Applicants believe claim 1 is patentable over Eggers.

Claims 2-11 and 13-15 are dependent on claim 1 and are therefore also believed to be patentable over Eggers for at least the same reasons.

Claim 12 was rejected under 35 USC 103(a) over Eggers (US 6,437,509) in view of Neiger (US 4,937,496).

Claim 12 is dependent on claim 1, believed by Applicants to be patentable over Eggers for the reasons already provided. Neiger does not cure this deficiency. Applicants therefore believe claim 12 is patentable in view of the combination of Eggers and Neiger.

Claims 16-19 were rejected under 35 USC 103(a) over Eggers (US 6,437,509) in view of Makoto (JP 11-123577).

Applicants believe Eggers does not in fact show the subject matter of an electrode with a pin shaped head part. Eggers in fact shows a pin shaped shaft in which the holes are produced in a globular shaped head part. Makoto does not cure this deficiency and in fact Makoto does not disclose either an electrode or an electrode comprising a hole.

Therefore we believe Claims 16-19 are patentable over the combination of Eggers and Makoto.

III. Conclusion

In view of the foregoing remarks, Applicants respectfully request reconsideration of this application and allowance of the pending claims.

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Respectfully Submitted,

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